

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the following discussion, is respectfully requested.

Claims 1 and 3-6 remain pending in the present application. No new matter has been added.

In the outstanding Office Action, Claims 1, 3, and 4 were rejected under 35 U.S.C. §103(a) as unpatentable over Ito et al. (EP Patent Application No. 1146569, herein Ito) in view of De Francesco (U.S. Patent No. 5,733,511, herein De Francesco); Claims 5 and 6 were rejected under 35 U.S.C. §103(a) as obvious over Ito and De Francesco in view of Pote et al. (U.S. Patent No. 5,239,134, herein Pote).

In response to the above noted rejections under 35 U.S.C. § 103, Applicants respectfully submit that independent Claim 1 recites novel features clearly not taught or rendered obvious by the applied references.

Claim 1 recites:

A method for plasma-enhanced chemical vapor deposition in which a discharge electrode and a substrate are disposed opposite to each other in a vacuum film formation chamber into which a gas for forming a film containing a substance has been introduced, and high-frequency electric power generated by a high-frequency electric power feeding circuit is fed to a plurality of feeding points provided to the discharge electrode through a plurality of external cables which are disposed outside the vacuum film formation chamber and then through a plurality of internal cables which are disposed inside the vacuum film formation chamber and which correspond with the external cables, respectively, so as to generate plasma between the discharge electrode and the substrate to vapor deposit the substance on the substrate,

wherein the discharge electrode is assembled from a plurality of longitudinal electrodes which are parallel, ***and a pair of transverse electrodes are disposed in parallel and opposite to each other, each of the transverse electrodes being provided with the plurality of feeding points;***

wherein a plurality of high-frequency electric power supplies feed the high-frequency electric power to the plurality of the feeding points through the external cable and the internal cables;

wherein phases of the high-frequency electric power at the feeding points are adjusted by changing electrical characteristics of the external

cables, the high-frequency electric power being fed to the plurality of feeding points; and

wherein the phases of the high-frequency electric power at the feeding points, the high-frequency electric power being fed to the plurality of feeding points, are adjusted by carrying out vapor deposition with change in electrical characteristics of the external cables, carrying out observations of the condition of the substance which has been vapor deposited on the substrate, and changing the electrical characteristics of the external cables on the basis of the observations.

In rejecting the features of a method for plasma-enhanced chemical vapor deposition that utilizes a pair of transverse electrodes disposed in parallel and opposite to each other, the Office Action relies especially on Fig. 2 and paras. [0062-0063] of Ito. Fig. 2 of Ito shows a plurality of inductive coupling electrodes which extend in a longitudinal direction. The two ellipsoids in Fig. 2 depict one end of the electrode as the feeding portion and the other end as the ground portion. The feeding portions and the grounding portions, as shown in Figs. 1, 3, 5, and 8 of Ito, are connected to the wall of the film forming chamber.

Since the inductive coupling electrodes of the feeding and ground portions in Ito are both connected to the wall of the film forming chamber, it is clear that Ito does not disclose or suggest a discharge electrode that is assembled from a plurality of longitudinal electrodes which are parallel, and “a pair of transverse electrodes are disposed in parallel and opposite to each other, each of the transverse electrodes being provided with the plurality of feeding points,” as recited in Claim 1.

Furthermore, it is respectfully noted that *In re Gordon* holds that there can be no suggestion or motivation to make a proposed modification if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Further, *In re Ratti* holds that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are

not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

In this regard, the claimed invention recites a method for plasma-enhanced chemical vapor deposition that employs a capacitive coupling type chemical vapor deposition (CVD) method, where the coupling electrodes are connected to a pair of transverse electrodes at feeding points. In a capacitive coupling type CVD, plasma is generated by the capacitance between the discharge electrode and the ground electrode. Ito, on the other hand, describes inductive coupling electrodes where the film forming chamber functions as the ground. In the case of an inductive coupling CVD apparatus, plasma is generated by an electric field by electromagnetic induction.

In fact, para. [0011] of Ito asserts that “it is meaningless to apply the method that is effective for the capacitive coupling PCVD method to the inductive coupling PCVD because the mechanism for maintaining the discharge is absolutely different between the inductive coupling and the capacitive coupling PCVD.”

As Ito does not recite a method for plasma-enhanced chemical vapor deposition that employs a capacitive coupling type CVD, it is respectfully submitted that modifying Ito to create the claimed invention would require a substantial redesign of Ito. Further, such a modification would make Ito unsuitable for its intended purpose, namely generating a substrate by plasma-enhanced chemical vapor deposition by employing an inductive coupling type CVD device.

As the proposed modification would clearly change the principle operation of Ito by requiring a complete redesign of the device described, and such a redesign would no longer provide a method for plasma-enhanced chemical vapor deposition that employs an inductive coupling type CVD device, it is respectfully submitted that there is no suggestion or motivation

to modify Ito to create the claimed invention. Consequently, Claim 1 (and Claims 3-6 dependent therefrom) is patentable over Ito.

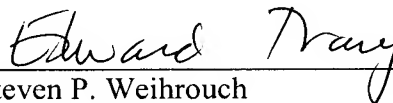
Further, De Francesco and Pote, applied secondary references, fail to remedy the above noted deficiencies of Ito.

Accordingly, for at least the reasons discussed above, Applicants respectfully request that the rejection of Claim 1 (and the claims that depend therefrom) under 35 U.S.C. § 103 be withdrawn.

Consequently, in view of the present amendment and in light of the foregoing comments, it is respectfully submitted that the invention defined by Claims 1 and 3-6 patentably defines over the applied references. The present application is therefore believed to be in condition for formal allowance and an early and favorable reconsideration of the application is therefore requested.

Respectfully submitted,

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